

REMARKS

Applicant wishes to thank the Examiner for the courtesies extended during the telephonic interview of April 28, 2003, and for the continued assistance during the subsequent telephone conversations pursuant to obtaining a meeting of the minds with respect to the claims. During the telephonic interview, claims 1, 5, 11, and 12 were discussed. However, no agreement with respect to the patentability of the claims was reached. Accordingly, this RCE is being filed in response to the Final Office Action dated January 2, 2003. The following remarks hereby expand on the subject matter of the telephonic interview. Claims 1-12 are pending. Claims 1, 5, 11, and 12 have been amended. New independent claim 13 has been added. No new matter has been added by way of this amendment. Reconsideration of the application is respectfully requested.

Claims 1, 2, 4, 5, 7, 10, and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,327,730 to *Sorenson* in view of U.S. Patent No. 5,660,788 to *Gray* et al., while claims 3, 6, and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over these two references, and in further view of U.S. Patent No. 5,955,187 to *McCormack*. These rejections are respectfully traversed.

Claims 1, 11 and 12 have been amended to recite that "uppermost portions of respective protrusions define contact points only at locations where the top sheet comes into contact with a wearer's skin". Support for this limitation may be found on page 11, line 20 thru page 12, line 4 of the specification. Here, the specification states that if the load compression (LC) value of the protrusions is smaller than the lowermost limit of the defined range, then the

protrusions will be crushed by the pressure of the body of a wear. Accordingly, this limitation does not constitute new matter.

In order to avoid plasticky, sticky feelings associated with the top sheet, the present invention requires the claimed protrusions to project beyond the top of the convex portion without causing any buckling. This reduces the contact area between the wearer's skin and the top sheet. As a result, any perceived plasticky, sticky feelings are reduced, and a sufficient level of air permeability is maintained across the space that is defined between the wearer's skin and the top sheet.

*Sorenson* discloses a disposable diaper having a textured top sheet of thermoplastic material. *Sorenson* fails to disclose that "uppermost portions, i.e., the apexes, of respective protrusions define contact points only at locations where the top sheet comes into contact with a wearer's skin." While the intent of *Sorenson* is to provide a clothlike feeling, the main intent of this patent is not to avoid the plasticky, sticky feelings associated with wearing an absorbent article when it is wet, as is the case with the present claimed invention as set forth in amended claims 1, 11 and 12.

Applicants further note that *Sorenson* has nubbles (14) formed over a tapered surface of the tapered capillary structure (38), which does corresponds to perforation 4 in the claimed invention. Nevertheless, the nubbles disclosed in *Sorenson* are far smaller than the tapered capillary structure, not only in size but also in height. Further, the size, height and pitch of the nubbles are determined so as to eliminate the plasticky appearance, but are not established with the intent of providing the physical effect of keeping the wearer's skin away from the film surface. Applicants respectfully assert that while a conclusion has been reached that the nubbles in *Sorenson* correspond to the protrusions in the claimed invention such a conclusion is

unjustified, since the claimed invention requires each protrusion to have a height that is greater than the convex portion of the particulate material, where “uppermost portions of respective protrusions define contact points that are located only at points where the top sheet contacts the skin of the wearer,” as set forth in amended independent claims 1, 11 and 12.

*Gray* et al. relates to a fluid pervious top sheet that is suitable for use on an absorbent article. This reference fails to cure the deficiency of the *Sorenson* reference. Specifically, the *Gray* et al. patent fails to teach the limitation “uppermost portions of respective protrusions define contact points that are located only at points where the top sheet contacts the skin of the wearer,” as set forth in amended independent claims 1, 11, and 12.

The *McCormac* patent relates to a breathable voided microporous film containing a particulate filler which swells inside the voids when wet, thereby enhancing the barrier features. However, even if this reference is combined with the teaching of the *Sorenson* and *Gray* et al. patents, Applicants respectfully asserts that the combination of these patents would fail to arrive at the invention as set forth in amended independent claims 1, 11 and 12. Specifically, the combined references would still fail to teach the limitation “uppermost portions of respective protrusions define contact points that are located only at points where the top sheet contacts the skin of the wearer,” as set forth in amended independent claims 1, 11 and 12.

In sum, none of the cited references teach or suggest, either individually or in combination, the present claimed invention. That is, the “protrusions having a greater height than the convex portion, where “uppermost portions of respective protrusions define contact points that are located only at points the top sheet contacts the skin of the wearer,” as positively recited in amended independent claims 1, 11, and 12. In view of this difference, Applicants

respectfully assert that the amend independent claims are patentable over the combination of the cited references.

New independent claim 13 includes a limitation directed to the exact height of the protrusions and the particles. Specifically, new independent claim 13 includes the limitation “the height of each protrusion being in a range of 0.05 mm to 1.0 mm and a mean particle size of said particulate material being in a range of 0.1  $\mu\text{m}$  to 30  $\mu\text{m}$ .” Applicant respectfully asserts that none of the cited references, teach or suggest, either individually or in combination, this limitation as set forth in new independent claim 13. Accordingly, this claim is also patentable over the combination of the cited references

In view of the patentability of independents claims 1, 11, 12, and new claim 13 for the reasons set forth above, dependent claims 2-7 and 10 are also patentable over the cited references.

In light of the foregoing remarks, this application should be in condition for allowance. Early passage of this case to issue is respectfully requested. However, if there are any questions regarding this Response, or the application in general, a telephone call to the undersigned would be appreciated since this would expedite the prosecution of the application for all concerned.

Date: April 30, 2003

Respectfully submitted,



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## COMPLETE SET OF PENDING CLAIMS

1. (Twice Amended) A top sheet including a number of perforations for covering a liquid-receiving surface of an absorbent article, wherein;

the top sheet is formed of a thermoplastic resin containing a particulate material, and

the top sheet is provided with fine convex portions defined by exposing a part of the particulate material on a body facing surface of the top sheet and a plurality of protrusions extending from the body facing surface, and the height of each protrusion from the body facing surface is larger than that of each fine convex portion therefrom, uppermost portions of respective protrusions defining contact points only at locations where said top sheet comes into contact with a wearer's skin.

2. (Amended) The top sheet as set forth in claim 1, wherein the particulate material has a mean particle size in a range between 0.1  $\mu\text{m}$  and 30  $\mu\text{m}$ .

3. (Amended) The top sheet as set forth in claim 2, wherein the thermoplastic resin contains at least two different sizes of particulate materials that differ from each other in the mean particle size by at least 9  $\mu\text{m}$ .

4. (Amended) The top sheet as set forth in claim 3, wherein the amount of the particulate material is in a range between 20 and 150 parts by weight relative to 100 parts by weight of the thermoplastic resin.

5. (Twice Amended) The top sheet as set forth in claim 1, wherein the mean height of the protrusions from the surface of the top sheet is in a range between 0.05 mm and 1.0 mm.

6. The top sheet as set forth in claim 1, which further includes micropores that allow water vapor to pass therethrough.

7. The top sheet as set forth in claim 1, wherein the protrusions are formed by mechanically stretching the top sheet.

8. A method for producing a top sheet for absorbent article, comprising;  
a) a step of mixing from 20 to 150 parts by weight of a particulate material with 100 parts by weight of a thermoplastic resin, followed by melt-extruding the resulting mixture to form a sheet material, and

b) a step of placing the sheet material on the surface of a perforating member, followed by vacuuming the sheet material through perforating holes of the perforation member to perforate the sheet material.

9. The method for producing a top sheet as set forth in claim 8, which further comprises, before the step (b), a step (c) of partially stretching the sheet material by use of needles to form a number of protrusions.

10. The top sheet as set forth in claim 1, wherein the particulate material is made of inorganic particles of at least one type selected from a group consisting of titanium oxide, calcium carbonate, soda ash, gypsum, calcium sulfate, barium sulfate, sodium sulfate, magnesium carbonate, magnesium sulfate, clay, calcium phosphate, silicic anhydride, carbon and talc.

11. (Amended) A top sheet including a number of perforations for covering a liquid-receiving surface of an absorbent article, wherein;

the top sheet is formed of a thermoplastic resin containing a particulate material of inorganic particles, and

the top sheet includes fine convex portions of the particulate material partially exposed on a body facing surface of the top sheet and a plurality of protrusions extending from the body facing surface, and the height of each protrusion from the body facing surface is larger than that of each fine convex portion therefrom, uppermost portions of respective protrusions defining contact points only at locations where said top sheet comes into contact with a wearer's skin.

12. (Amended) A top sheet including a number of perforations for covering a liquid-receiving surface of an absorbent article, wherein;

the top sheet is formed of a thermoplastic resin containing a particulate material, and

the top sheet includes micropores formed around the particulate material, fine convex portions of the particulate material on a body facing surface of the top sheet, a plurality of protrusions extending from the body facing surface, and the height of each protrusion from the body facing surface is larger than that of each fine convex portion therefrom, uppermost portions of respective protrusions defining contact points only at locations where said top sheet comes into contact with a wearer's skin.

13. (New) A top sheet including a number of perforations for covering a liquid-receiving surface of an absorbent article, wherein;

the top sheet is formed of a thermoplastic resin containing a particulate material, and

the top sheet is provided with fine convex portions defined by exposing a part of the particulate material on a body facing surface of the top sheet and a plurality of protrusions extending from the body facing surface, and the height of each protrusion being in a range of 0.05 mm to 1.0 mm and a mean particle size of said particulate material being in a range of 0.1  $\mu\text{m}$  to 30  $\mu\text{m}$ .

## EXPRESS MAIL CERTIFICATE

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PATENT TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Satoshi MIZUTANI et al. Confirmation No.: 6716

Serial No.: 09/771,131

Art Unit: 1772

Filed: January 26, 2001

Examiner: CHEVALIER, Alicia Ann

For: TOP SHEET FOR ABSORBENT ARTICLES, AND METHOD FOR PRODUCING IT

MARK-UP FOR AMENDMENT OF APRIL 30, 2003  
PURSUANT TO §1.121

**Box RCE**

Assistant Commissioner for Patent  
 Washington, DC 20231

Sir:

**IN THE CLAIMS:**

1. (Twice Amended) A top sheet including a number of perforations for covering a liquid-receiving surface of an absorbent article, wherein;
  - the top sheet is formed of a thermoplastic resin containing a particulate material, and

the top sheet is provided with fine convex portions defined by exposing a part of the particulate material on a body facing surface of the top sheet and a plurality of protrusions extending from the body facing surface, and the height of each protrusion from the body facing surface is larger than that of each fine convex portion therefrom, uppermost portions of respective protrusions defining contact points only at locations where said top sheet comes into contact with a wearer's skin.

5. (Twice Amended) The top sheet as set forth in claim 1, wherein the mean height of the protrusions from the surface of the top sheet is in a range between 0.05 mm and 1.0 mm.

11. (Amended) A top sheet including a number of perforations for covering a liquid-receiving surface of an absorbent article, wherein;

the top sheet is formed of a thermoplastic resin containing a particulate material of inorganic particles, and

the top sheet includes fine convex portions of the particulate material partially exposed on a body facing surface of the top sheet and a plurality of protrusions extending from the body facing surface, and the height of each protrusion from the body facing surface is larger than that of each fine convex portion therefrom, uppermost portions of respective protrusions defining contact points only at locations where said top sheet comes into contact with a wearer's skin.

12. (Amended) A top sheet including a number of perforations for covering a liquid-receiving surface of an absorbent article, wherein;

the top sheet is formed of a thermoplastic resin containing a particulate material, and

the top sheet includes micropores formed around the particulate material, fine convex portions of the particulate material on a body facing surface of the top sheet, a plurality of protrusions extending from the body facing surface, and the height of each protrusion from the body facing surface is larger than that of each fine convex portion therefrom, uppermost portions of respective protrusions defining contact points only at locations where said top sheet comes into contact with a wearer's skin.

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